

# SENATE BILL 64 FLOODPLAIN AND DRAINAGE ADVISORY COMMITTEE COMMUNITY OUTREACH MEETING

August 14, 2012 Sussex County

August 15, 2012 Kent County

August 17, 2012 New Castle County



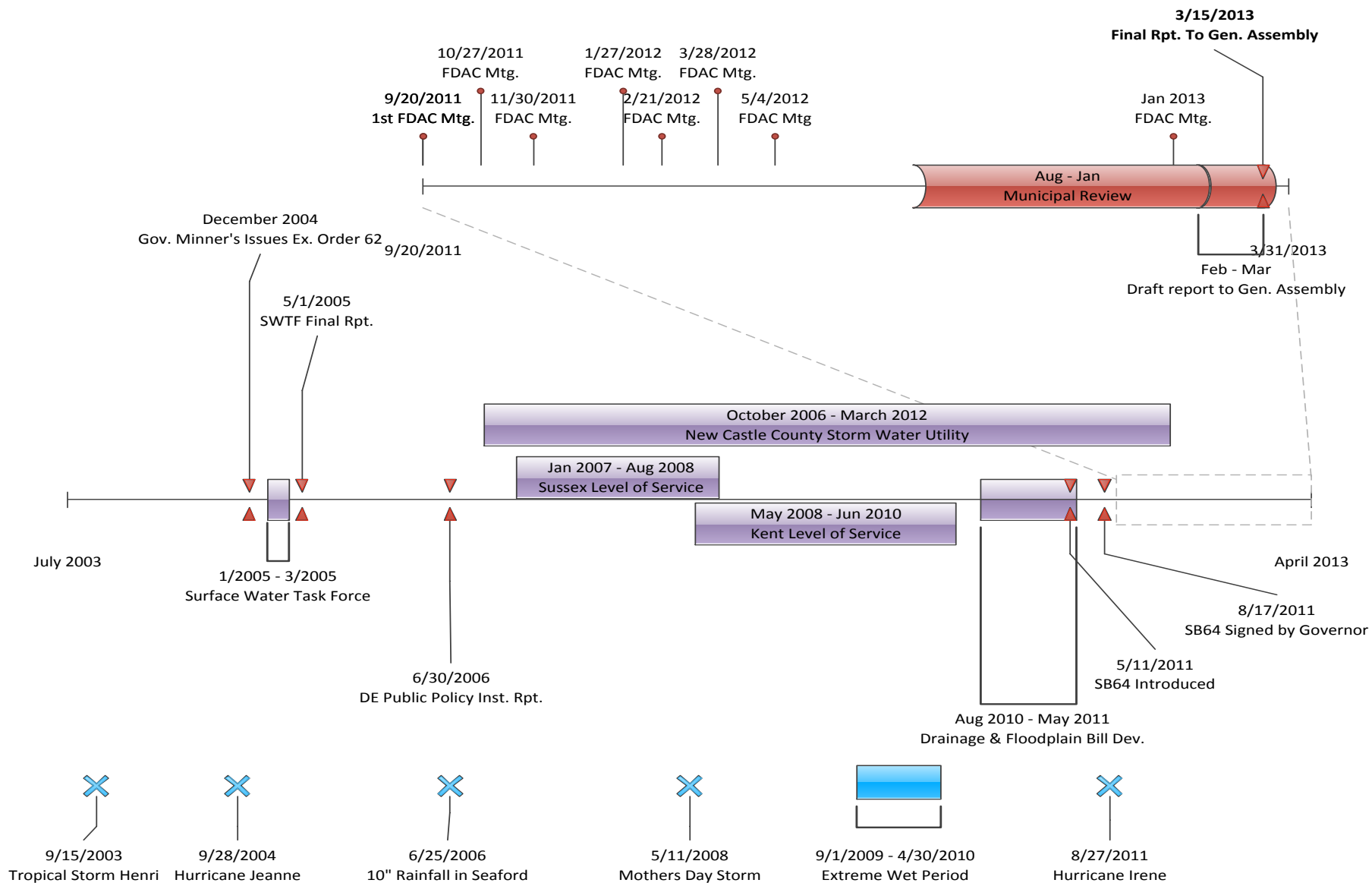
[www.dnrec.delaware.gov/swc/Pages/FloodplainandDrainageCodeWorkGroupCommittee.aspx](http://www.dnrec.delaware.gov/swc/Pages/FloodplainandDrainageCodeWorkGroupCommittee.aspx)

# AGENDA

- Introductions.
- Overview of Senate Bill 64 and purpose of community outreach meeting.
- History of flooding and drainage issues.
- Review of floodplain and drainage standards and recommendations.
- Municipal code review process.
- Local comments on capacity.
- FEMA New Castle County flood studies and ordinance adoption timeline.

# Prior Efforts

- Governor Minner's Task Force on Surface Water Management (2005).
  - Led to overhaul of Clean Water Advisory Council and larger role in drainage issues.
- Delaware Public Policy Institute Dialogue on Financing Wastewater and Stormwater Infrastructure (2006)
  - Further assessment of wastewater and stormwater infrastructure funding needs
- Sussex County and Kent County Level of Service Analysis of Surface Water Management Needs (2008 and 2010 respectively)
  - Identified specific needs in 12 program areas



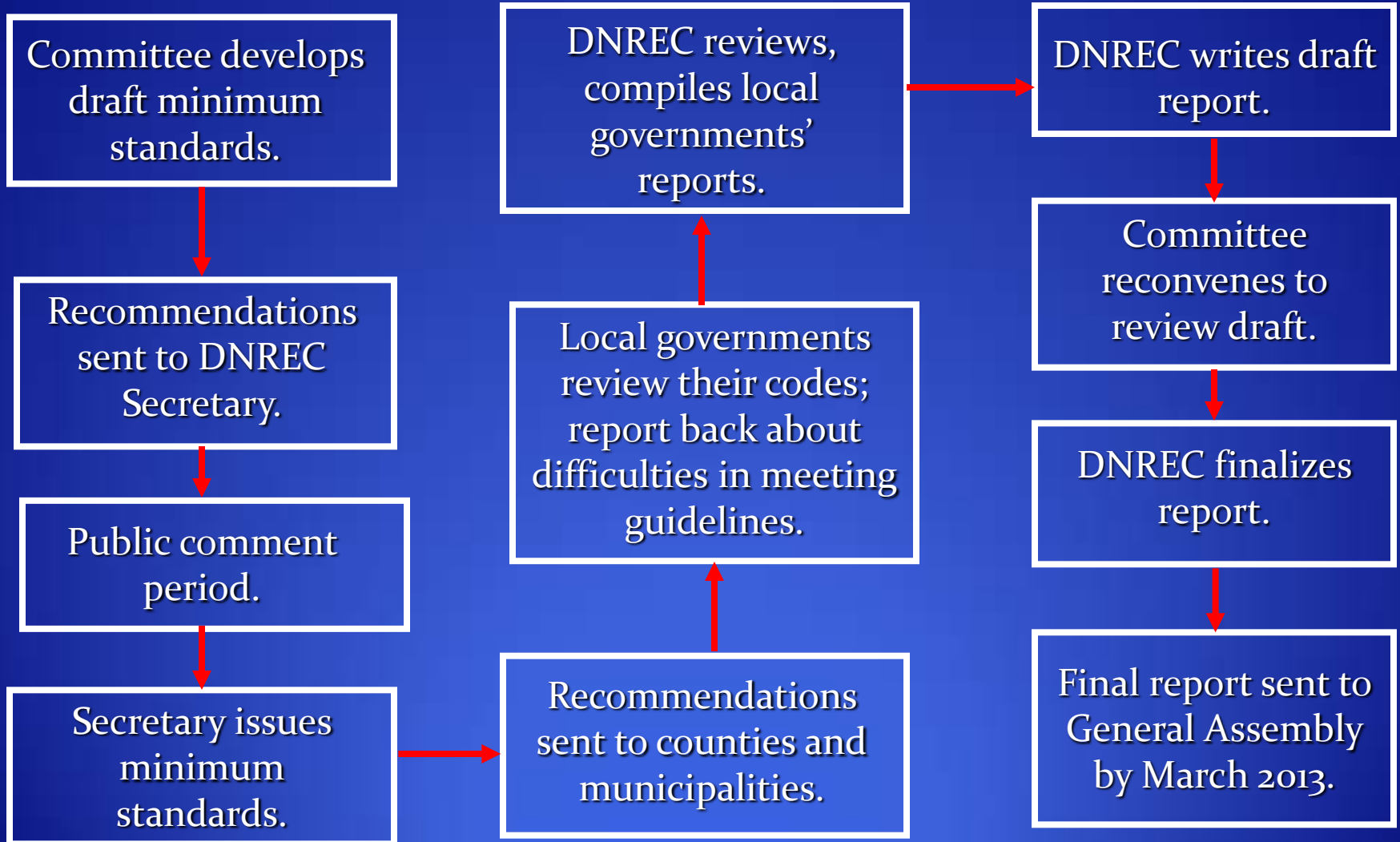


# Overview of Senate Bill 64

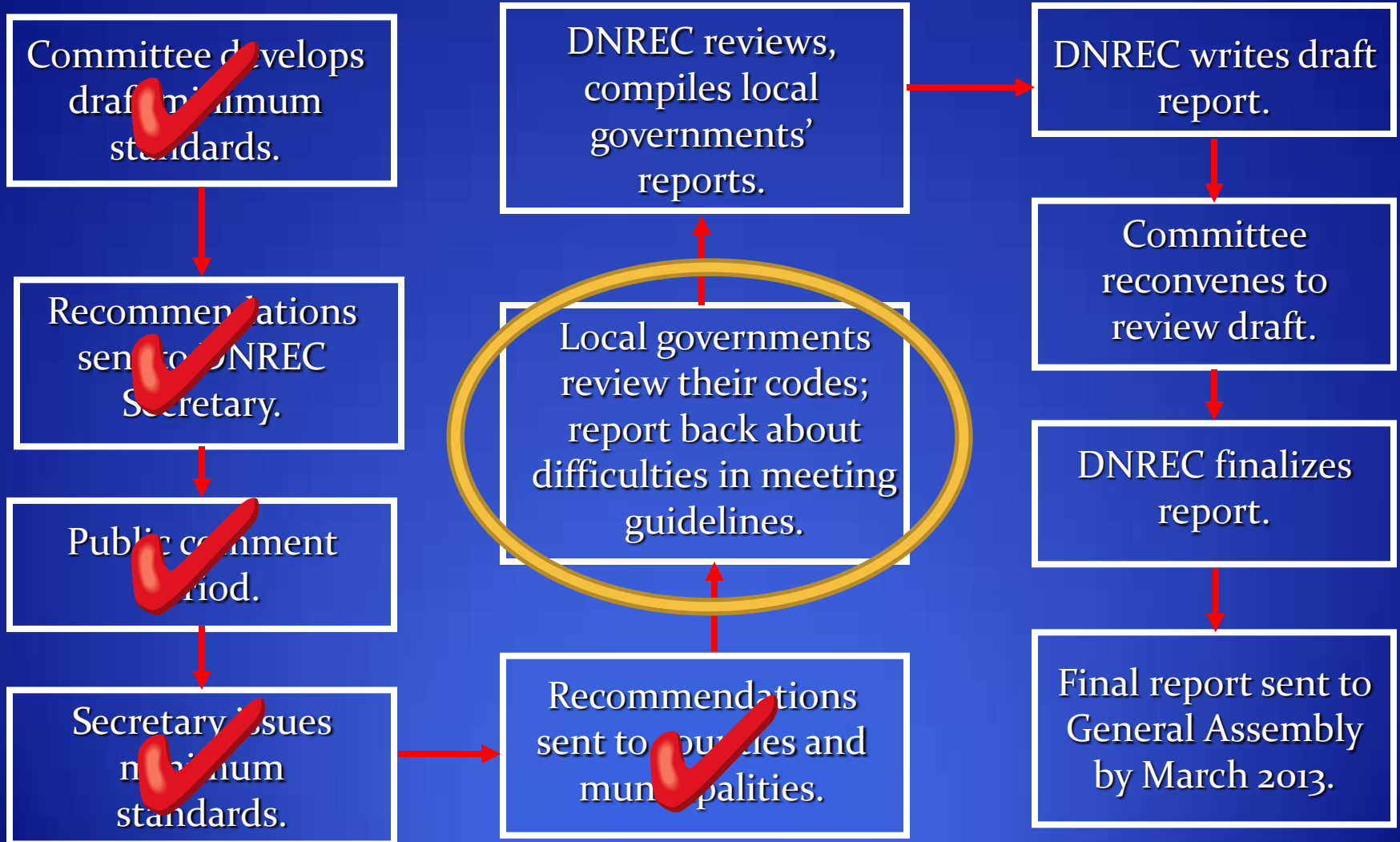
# Elements of SB 64

- Authorizes Secretary to develop guidance and minimum standards for improved floodplain management and drainage after consultation with Floodplain and Drainage Advisory Committee. (9 months)
- Requires three county and all municipal governments to review their individual codes and ordinances (with DNREC assistance) to determine consistency and identify hardships and impediments to implementation (next 6 months)
- Mandates DNREC review of comments and preparation of draft and final reports to General Assembly (by March 15, 2013)
- Includes provisions for permit waivers under certain conditions such as life threatening emergencies, regulatory overlaps, etc. (not a Committee charge)

# SB-64 Process



# SB-64 Process



# Purpose of Community Outreach Meeting

# Purpose

- Present the Floodplain and Drainage Advisory Committee final report (see handout)
- Inform the communities about the need to assess and report their capacity.
- Request communities self-review of ordinances.

# BACKGROUND OF FLOODING AND DRAINAGE ISSUES

# DRAINAGE AND FLOODING FACTS

- Delaware is the lowest state in the USA with a mean elevation of just 60 feet above sea level.
- Over 331 square miles or 17% of Delaware's land mass is within a mapped 100 year floodplain.
- Approximately 621 road miles and over 18,000 structures are in the 100-year floodplain.
- State expenditures each year to resolve drainage problems have cost taxpayers an estimated \$65 million since 1996.



# Drainage and Stormwater Public Contacts Database

- Statewide Single Point of Contact and tracking database a result of Gov. Minner's Surface Water Task Force.
- System was launched in early 2007
- Only Tracks concerns from DNREC and partners like NCCD, KCD, SCD



Drainage, Sediment & Stormwater Concern Contact

Current User: Brooks P. Canale

Last Name:  Search

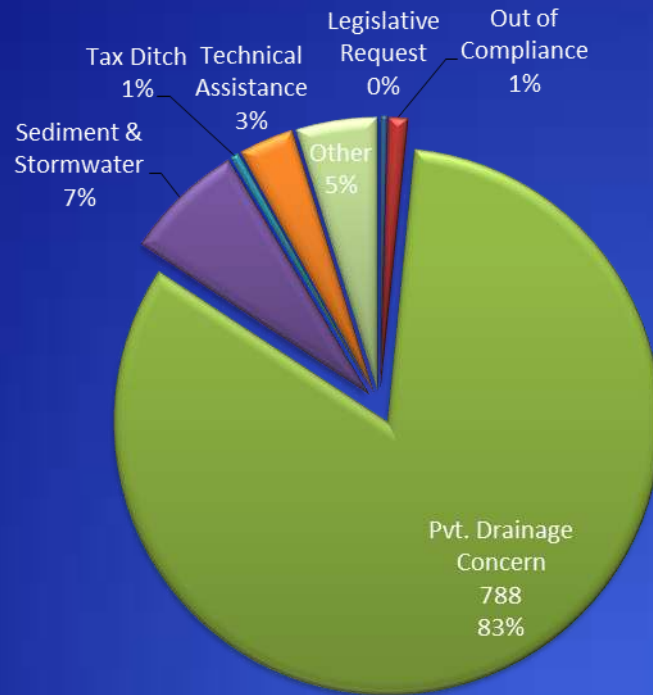
County: All Assigned Agency:

Concern ID	Concern Date	Last Name	First Name	Assigned Agency	Resolved	Details
8,2012,120	11/18/2011	Conr	Cathy	NCCD **		Details
8,2012,122	11/17/2011	Harding	Beverly	NCCD **		Details
5,2012,27	11/16/2011	Playter	Judith	Drainage Section		Details
8,2012,126	11/16/2011	Hertack	Rick	NCCD **		Details
8,2012,121	11/16/2011	Hammerick	Charles	NCCD **		Details
8,2012,116	11/16/2011	Kunzel	Du	NCCD **		Details
5,2012,21	11/7/2011	Wernstein	Joseph	Drainage Section		Details
5,2012,22	11/7/2011	Bennett	Mike		11/7/2011	Details
8,2012,118	11/7/2011	Shurts	Paul	NCCD **		Details
5,2012,20	11/3/2011	Ednie	Howard	Drainage Section		Details
8,2012,134	11/2/2011	Johnson	Chris	KCD **		Details
8,2012,135	11/2/2011	Brinson	Paul	KCD **		Details
8,2012,117	11/1/2011	Dolan	Lee	Shoreline and Waterway	11/3/2011	Details
8,2012,115	11/1/2011	Hayes	Maria	NCCD **		Details
8,2012,116	11/1/2011	Vancilder	Gail	NCCD **		Details
5,2012,28	10/27/2011	Lee	Lia	Drainage Section		Details
5,2012,29	10/27/2011	James	Theodore	Drainage Section		Details
8,2012,137	10/25/2011	Burk	Diane	Drainage Section	10/26/2011	Details
5,2012,27	10/25/2011	Wolman	Brend	Drainage Section		Details

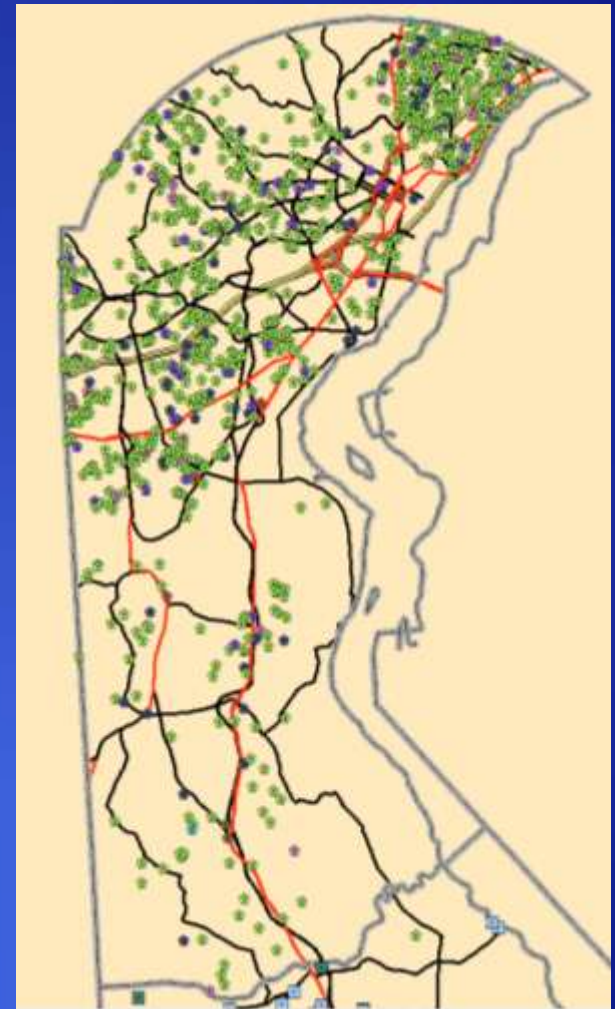
## Annual Drainage Concern Totals



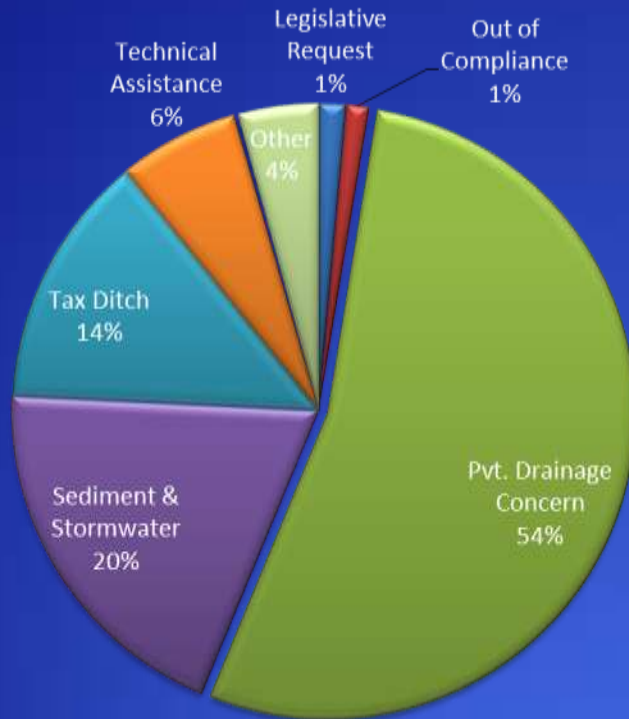
# New Castle County Drainage Concerns



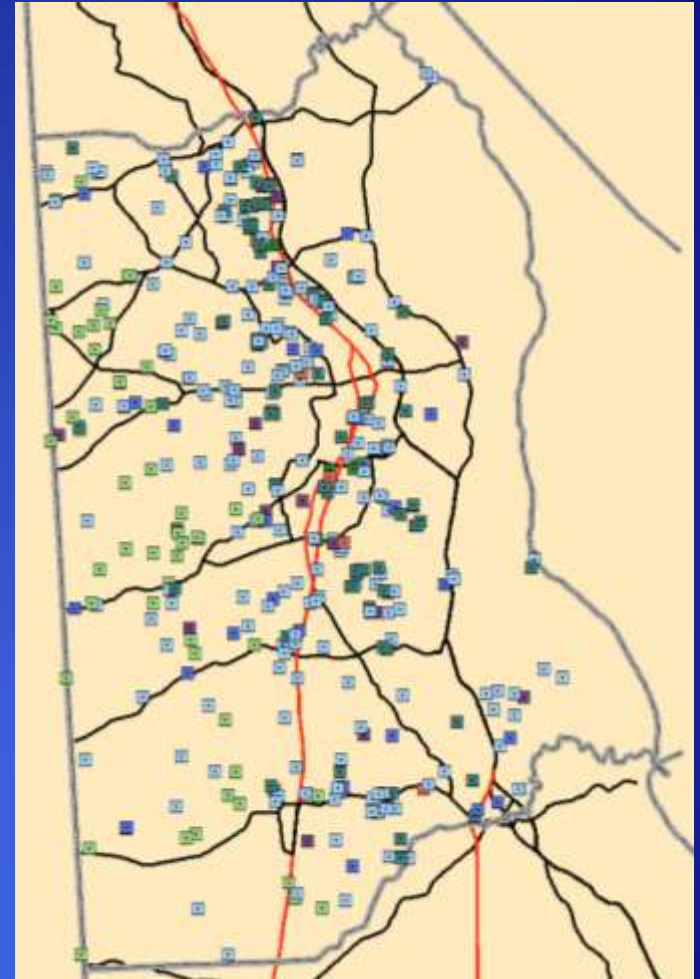
- 953 Drainage Concerns Since Jan. 2007
- 1** Drainage Concern for **228** Housing Units
- 1** Drainage Concern for **198** Parcels



# Kent County Drainage Concerns

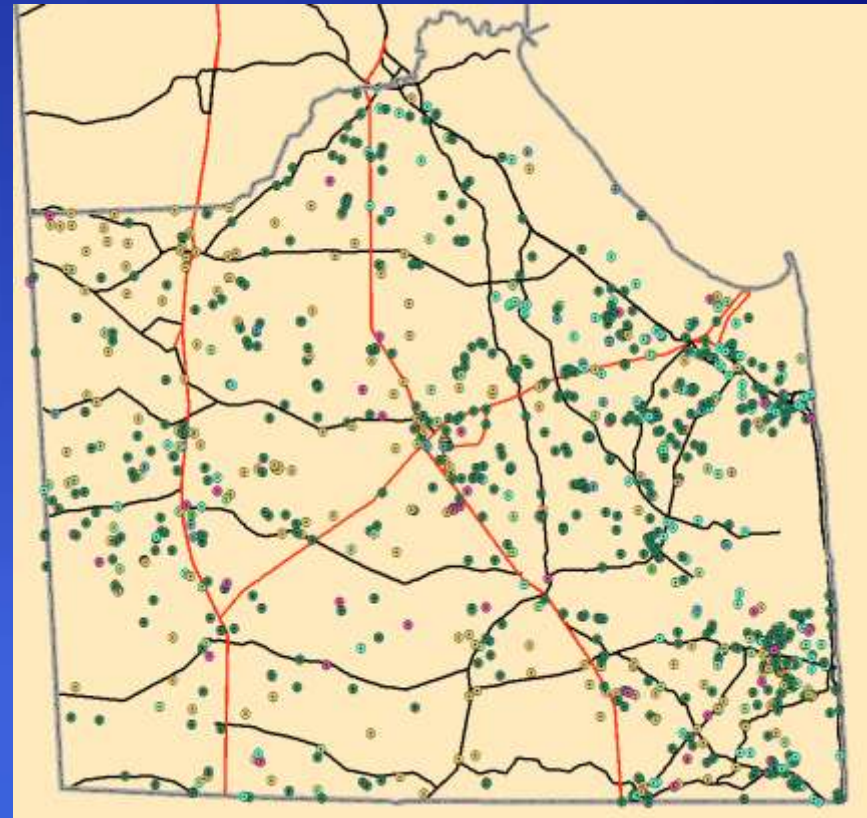
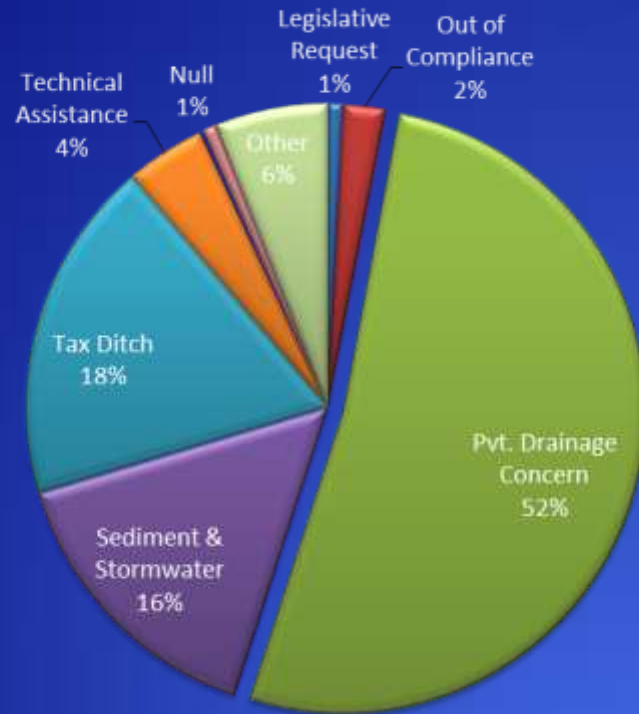


- 425 Drainage Concerns Since Jan. 2007
- **1** Drainage Concern for **154** Housing Units
- **1** Drainage Concern for **201** Parcels



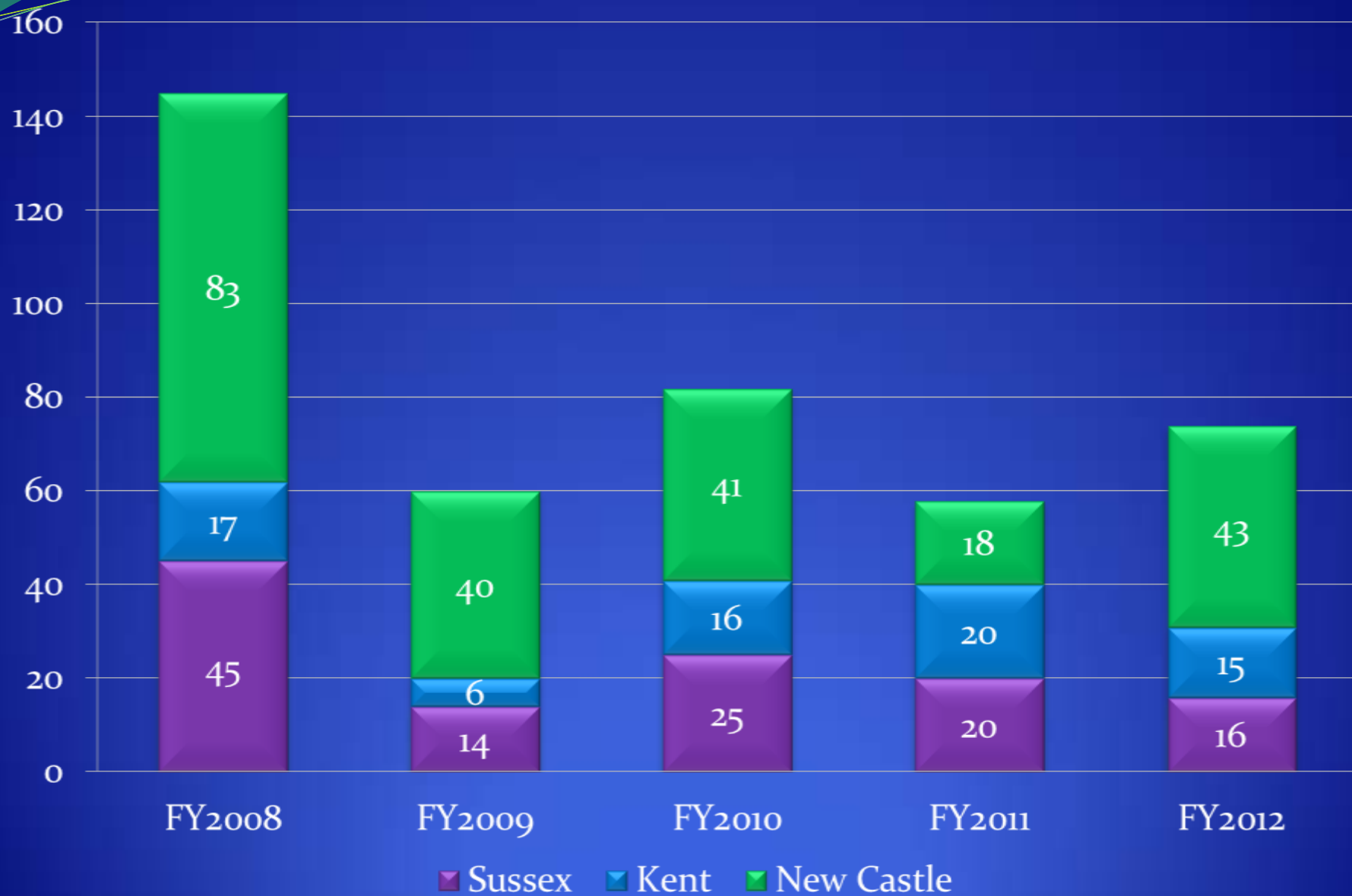


# Sussex County Drainage Concerns

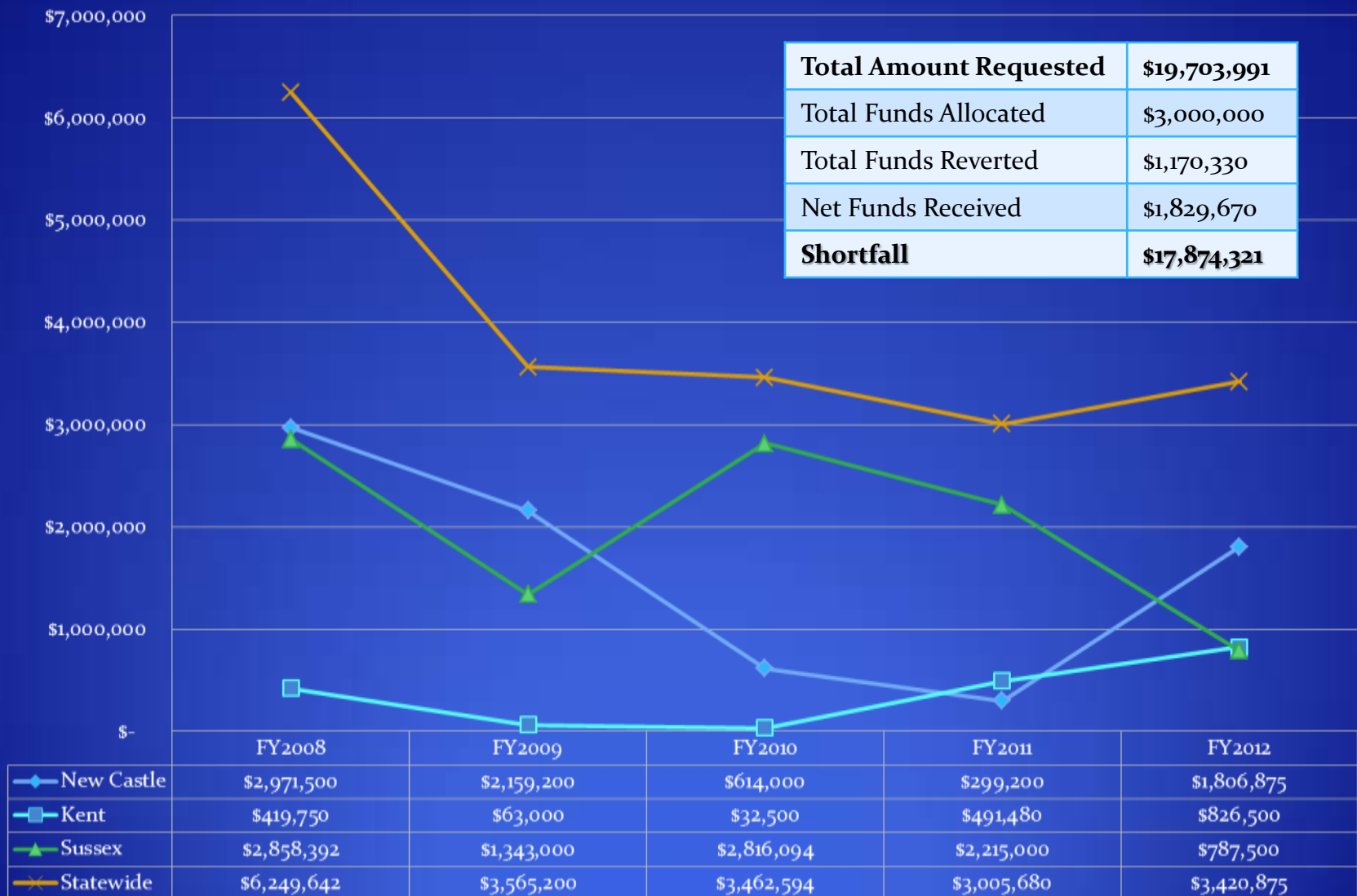


- 1,007 Drainage Concerns Since Jan. 2007
- 1 Drainage Concern for 122 Housing Units
- 1 Drainage Concern for 131 Parcels

## New 21st Century Fund Projects



## 21st Century Funds Requested for New Projects



Total Amount Requested	\$19,703,991
Total Funds Allocated	\$3,000,000
Total Funds Reverted	\$1,170,330
Net Funds Received	\$1,829,670
<b>Shortfall</b>	<b>\$17,874,321</b>



COMMERCIAL  
LANDS  
REALTY  
815-1000

200 5 1015





















FOR SALE  
BY OWNER  
CALL 202-261-1234  
202-261-1234











# Stormwater vs. Drainage

## Stormwater Management

- Management of increased runoff caused by a change in land use.
  - Agricultural Field → Residential Development
- Specific Storms are Analyzed
  - 2 year
  - 10 year
  - 100 year
- Management accomplished through the use of ponds and other BMP's

## Drainage

- Removal of runoff over an acceptable period of time.
- Typically 24-48 hours
- Drainage Improvements are accomplished by improving the conveyance system.
  - Swales
  - Ditches
  - Storm Drains

# Top Drainage Issues

- Disruption of Existing Drainage Patterns
- Inadequate Lot Grading
- Adverse Lot Grading
- Need for Proper Conveyance with Easements for Drainage Infrastructure
- Lack of Real Estate Disclosures



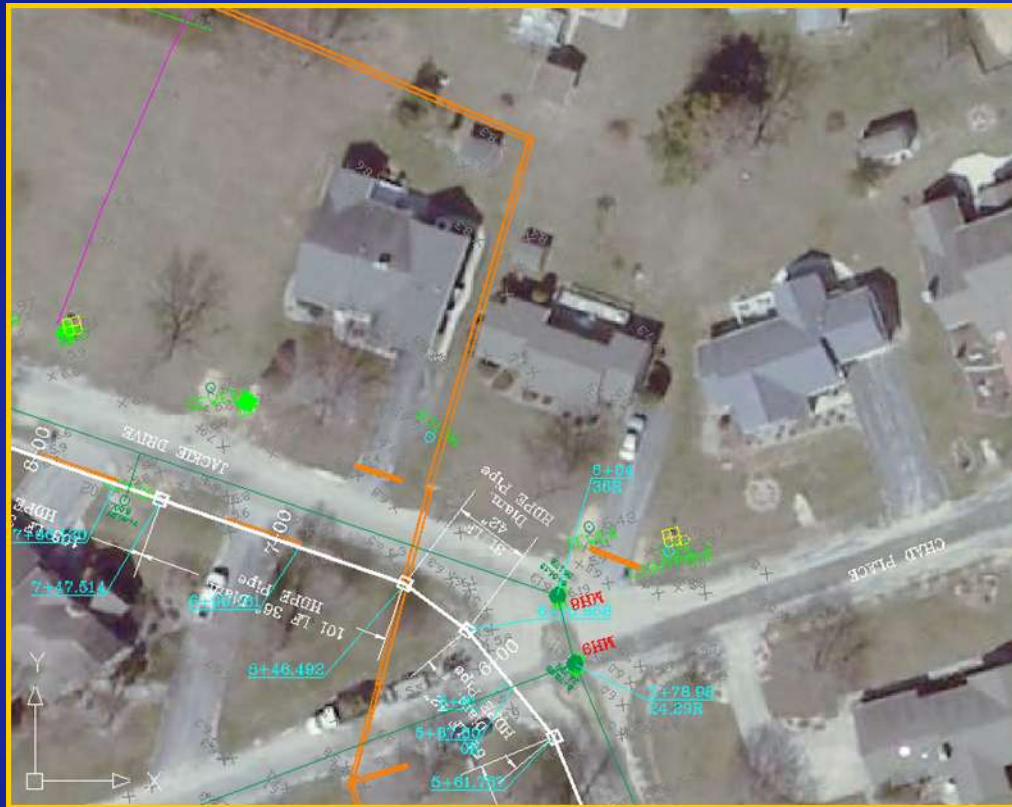


# REVIEW OF FLOODPLAIN AND DRAINAGE STANDARDS AND RECOMMENDATIONS

# Drainage Standards

Issues and standards that were developed.

Issue: Need for easements to provide access to drainage infrastructure.



Orange lines are the location of a 20+ year old CMP. There is approximately 15' between houses making replacement dangerous.

# Standard 1: Easements

**Current Criteria:** There is no current statewide standard. In many jurisdictions there are no or minimal easement requirements

## **Proposed Standard:**

Easements of an adequate width shall be required over drainage conveyance systems within any proposed subdivision. Easements shall clearly designate responsible parties. The maintenance responsibilities shall be included as part of the easement language.



Lot Scenarios				
Previously Recorded Lots	Minor Subdivision	Major Subdivision	Single Parcel Commercial	Multiple Parcel Commercial
	✓	✓		✓



# Issue: Disruption of drainage patterns.



# Standard 2: Obstructions

## Current Criteria:

There is no current statewide standard. In many jurisdictions there are no restrictions on the blocking of Drainage conveyances.

## Proposed Standard:

The willful or negligent obstruction of any drainage conveyance shall be prohibited.



Lot Scenarios				
Previously Recorded Lots	Minor Subdivision	Major Subdivision	Single Parcel Commercial	Multiple Parcel Commercial
✓	✓	✓	✓	✓



# Issue: Conveyance



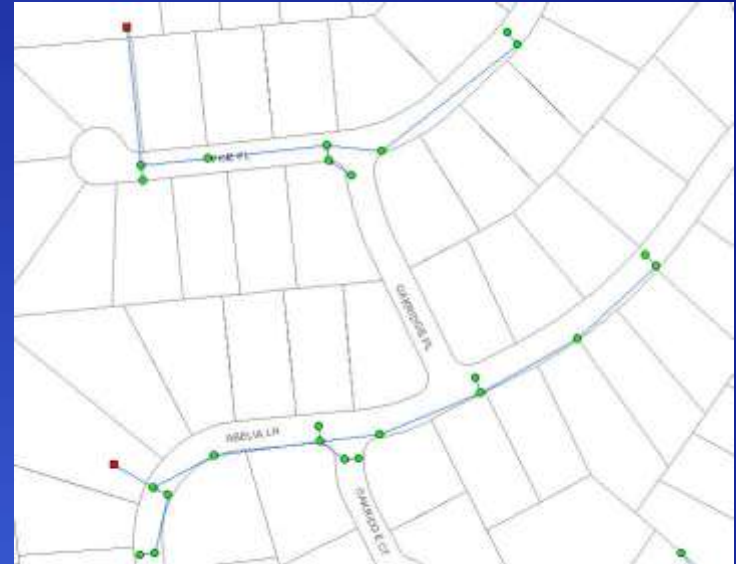
# Standard 3: Conveyance Systems

## Current Criteria:

There is no current statewide standard. Many jurisdictions already use this standard.

## Proposed Standard:

Drainage Conveyance systems within proposed subdivisions shall meet the minimum 10-year storm event.



Lot Scenarios				
Previously Recorded Lots	Minor Subdivision	Major Subdivision	Single Parcel Commercial	Multiple Parcel Commercial
	✓	✓		✓

# Issue: Lot Grading



Raised lots create problem for home at original grade.

# Standard 4: Lot Grading

## Current Criteria:

There is no current statewide standard. Most jurisdictions do not have any lot grading requirements.

## Proposed Standard:

Lot grading shall be accomplished to ensure adequate drainage away from buildings and accessory structures without creating an adverse impact to adjacent structures or lands.



Lot Scenarios				
Previously Recorded Lots	Minor Subdivision	Major Subdivision	Single Parcel Commercial	Multiple Parcel Commercial
✓	✓	✓	✓	✓



# Standard 5: Topographic Plan

**Current Criteria:** There is no current statewide standard. Most jurisdictions do not have any topographic requirements.

## Proposed Standard:

A topographic plan submittal shall be required for all construction activity greater than 5,000 square feet. This submittal shall be required for all building permits exceeding the threshold. Information shall include finished floor elevation and grading to a point of positive conveyance. Finished floor elevations shall be higher than the road elevation unless adequate drainage away from structures, protection of mechanical systems, and no adverse impacts to adjacent structures can be demonstrated.



New home construction conveys runoff to existing house.

Lot Scenarios				
Previously Recorded Lots	Minor Subdivision	Major Subdivision	Single Parcel Commercial	Multiple Parcel Commercial
✓	✓	✓	✓	✓

# Standard 6: As-builts

**Current Criteria:** There is no current statewide standard. Most jurisdictions do not have any as-built requirements.

## Proposed Standard:

An as-built submittal shall be required for any construction with an approved topographic plan. Information to be shown shall include floor elevation, road elevation, and a sufficient number of ground elevations to clearly demonstrate adequate drainage away from structures, protection of mechanical systems, and no adverse impacts to adjacent structures or lands.



Lot Scenarios				
Previously Recorded Lots	Minor Subdivision	Major Subdivision	Single Parcel Commercial	Multiple Parcel Commercial
✓	✓	✓	✓	✓

# Drainage Recommendations



# Drainage recommendations

- #1 The review of existing drainage patterns should be included not only in the subdivision planning process, but in the building permit process as well.
- #2 Permanent easements conveyed to a public entity should be considered whenever public dollars are spent to correct a drainage deficiency.
- #3 DNREC should oversee the preparation of a guideline similar to the Residential Lot Grading Guidelines from Deltona, Florida. County or municipal governments should then incorporate the guidelines into their codes and ordinances.

# BACKGROUND OF FLOODING ISSUES

- Despite increased flood risk (increased average rainfall, sea level rise, and watershed changes are contributing factors) many areas have not updated flood plain maps or floodplain development standards.
- Over 200 publicly funded floodplain buyouts in the past 10 years (\$50 mil.).
- Over 50 publicly funded home elevation projects since 1995 (\$4 mil.).
- Six major public funded commercial bldgs. floodproofed since 2000 (\$3 mil.).

# BACKGROUND OF FLOODING ISSUES

- Flood insurance premiums have increased significantly, and the NFIP Reauthorization Act of 2012 will result in additional steep premium increases.
- Flood damage is far greater to buildings with minimal NFIP compliance than to buildings built to higher standards.



# SUBDIVISION IN NON-TIDAL FLOODPLAIN – LOTS IN FLOODPLAIN

Study never submitted to FEMA for Map Revision





# Improved Floodplain Regulations and Enforcement

**Lowers the cost of flood insurance.**

**Avoid NFIP probation ensures continued insurance availability.**

**Reduce flood damage and expensive drainage solutions.**




# Improved Floodplain Regulations and Enforcement

Notify potential buyers about flood risk and insurance requirements.

Prevent flood damage which is not covered by homeowners insurance limited coverage by flood insurance.

Reduce the need for expensive flood abatement projects.

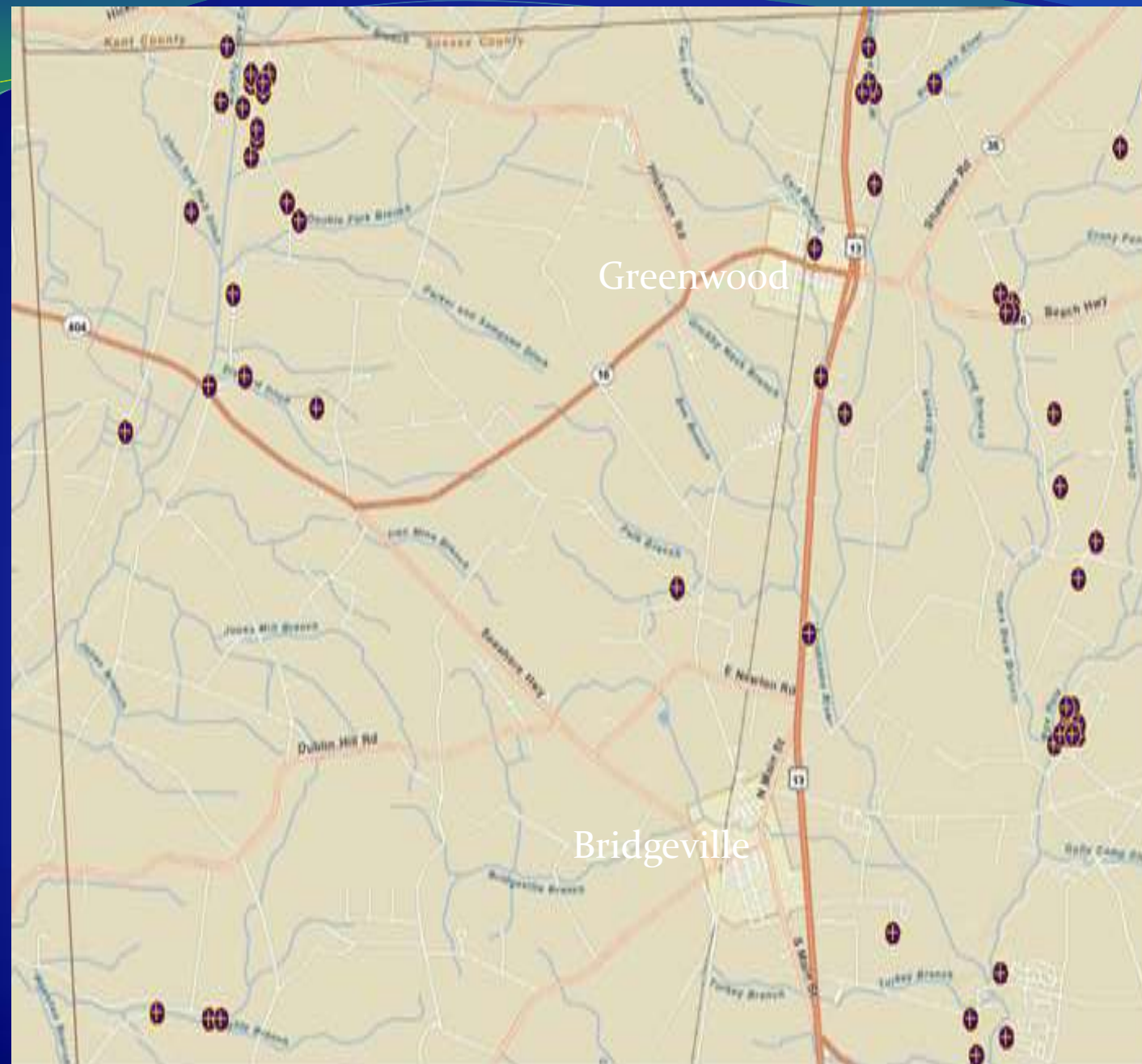


Foundation collapse of improperly elevated house \$60,000 to repair.

Adjacent house built 1.5 feet above flood level undamaged.



# Improved Floodplain Mapping



**Over 50  
Floodplain  
corrections to bad  
maps in one part  
of Sussex County.**

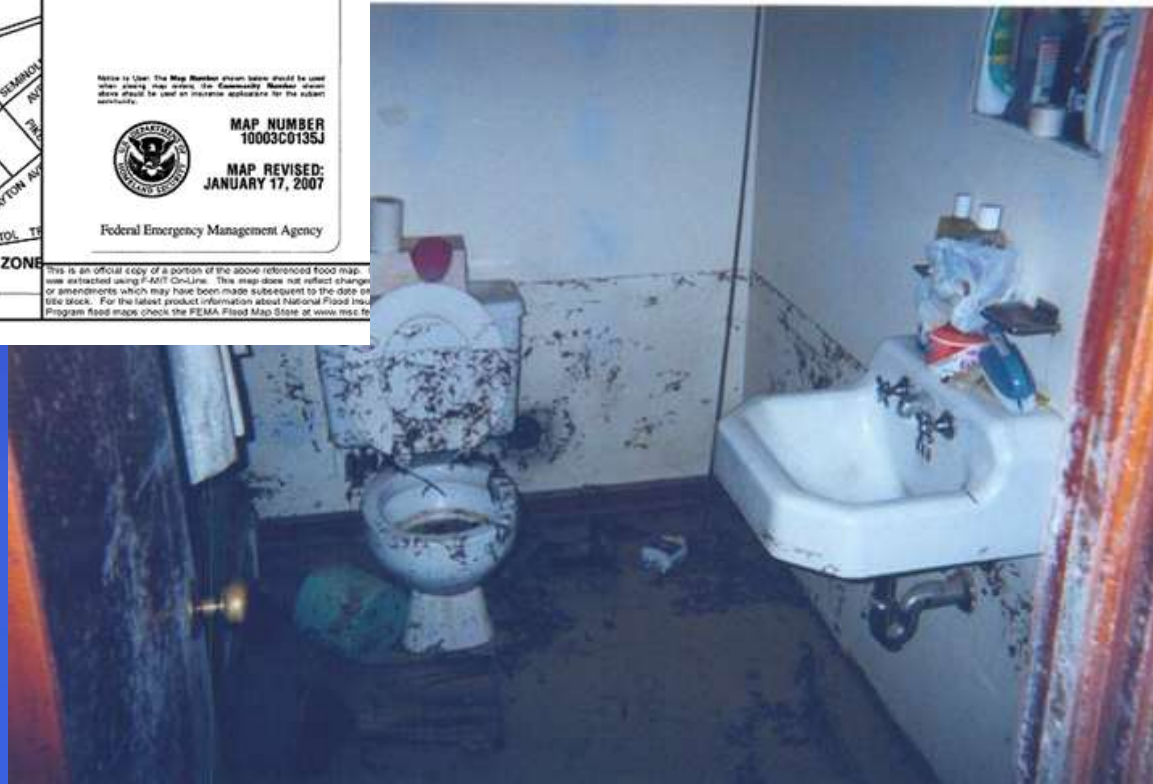
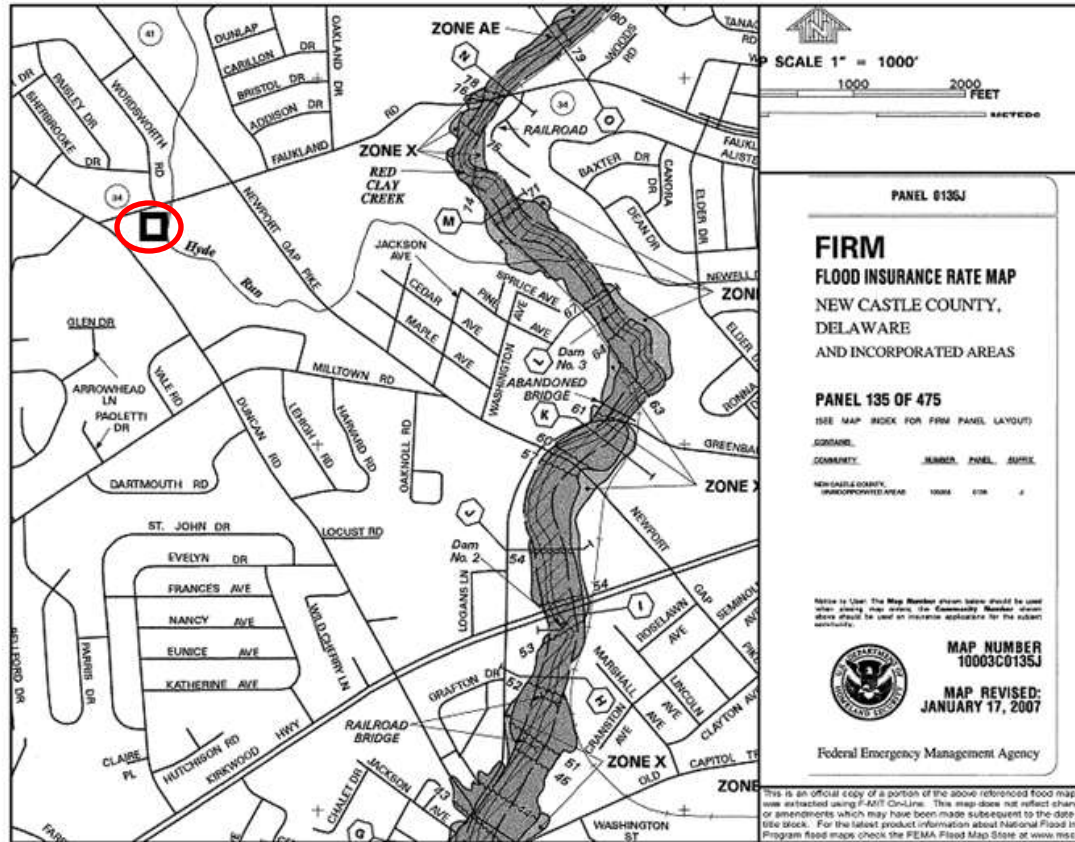
**Each property  
owners spent  
\$1000+ on survey  
and \$1000+/year in  
flood insurance.**

**Potential saving of  
about \$10,000 per  
mile of stream  
with improved  
mapping.**

# Floodplain Standards

Issues vs. standards that were developed.

# Issue: Flooding outside SFHA.





# Standard 1: Flood study required in unmapped floodplains

**Current Criteria:** There are currently no NFIP minimum standards for development projects contiguous to streams where FEMA has not delineated a floodplain area.

**Proposed Standard:** For all new development activities which exceed 50 lots or 5 acres in locations contiguous to streams without a FEMA-delineated floodplain, with an upstream watershed greater than 1 square mile, a flood study shall be conducted in accordance with FEMA study criteria. Base flood elevations (BFEs) and floodplain delineations shall be submitted to local jurisdictions prior to record plan approval or building permit issuance. This standard does not apply to Minor Subdivisions as defined by local governments.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision >= 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
	✓		✓		✓		



Issue: Flood studies are not being done in accordance with NFIP requirements.



# Standard 2: Flood Study required in Zone A (no BFE) FEMA mapped floodplains.

**Current Criteria:** The NFIP minimum standards require “base flood elevation data” to be included with all development proposals which exceed either 5 acres or 50 lots. The term “base flood elevation data” is not defined and has been interpreted to allow a wide range of submittals which do not reflect actual calculations of flood risk.

**Proposed Standard:** For all new development activities which exceed 50 lots or 5 acres in FEMA mapped floodplain areas without a base flood elevation, a flood study shall be conducted in accordance with FEMA study criteria. Base flood elevations and floodplain delineations shall be submitted to FEMA and approved prior to record plan approval so that official maps can be revised with these BFE’s and floodplain delineations. This standard does not apply to Minor Subdivisions as defined by local governments.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision ≥ 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
	✓		✓			✓	



[illegible]

# Actual effective SFHA





# Standard 3: Only FEMA approved floodplain and BFE data shall be shown on record plans and development documents.

**Current Criteria:** There are currently no NFIP minimum standards defining the source of base flood elevations or floodplain delineations which are depicted on building permit or development documentation.

**Proposed Standard:** In all areas with delineated floodplains, record plans and development documents shall show the floodplain delineation from a flood study approved by FEMA (with BFE where applicable). Flood studies submitted to FEMA for map revisions must be approved prior to the recordation stage for subdivisions.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision >= 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓

# Issue: Floodplain calculation methods used to prevent risk.



# Standard 4: Use accepted base flood elevations in building permit application documents.

**Current Criteria:** There are currently no NFIP minimum standards defining the source of base flood elevations or floodplain delineations which are depicted on building permit application documents.

**Proposed Standard:** All building permit application documents in a floodplain shall reference only base flood elevation and/or floodplain delineation developed in flood studies which have been reviewed and approved by appropriate county or municipal agency, or the Federal Emergency Management Agency where applicable.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision >= 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓



Issue: many building permits are issued for development in floodplains with missing or incorrect floodplain documentation



## Standard 5: Floodplain information included on permitting documentation.

**Current Criteria:** The NFIP does not stipulate the administrative permitting process for floodplain development, although 44 CFR 60.3 (the NFIP Regulations) does require that a permit be issued for all development in a floodplain.

**Proposed Standard:** Floodplain information including Floodplain Map used, effective flood zone delineations, base flood elevations, and proposed lowest floor elevations shall be required on record plans and development documents for all new development activities or substantially improved structures (as defined by local governments) within a FEMA floodplain.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision >= 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓

## Standard 6: Require use of elevation and flood proofing certificates.

**Current Criteria:** The NFIP does not require the use of Elevation Certificates or Flood proofing Certificates.

**Proposed Standard:** FEMA Elevation certificates shall be completed properly for both pre and post-construction for all new structures and substantially improved structures (as defined by local governments) in the floodplain. For all new structures to be dry-flood proofed, a FEMA Flood proofing Certificate form shall be completed both pre and post construction.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision >= 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓



Issue: Federal minimums leave homes at risk:  
Even floods which do not overtop the lowest floor cause significant damage

### CONTENTS DEPTH-DAMAGE FUNCTION (DDF)

Flood Depth (feet)	Building DDF(%)	ESTIMATED CONTENTS DAMAGE		
		Default DDF (%)	User-Entered DDF (%)	
-2	0	0.0		
-1	0	0.0		
0	5	7.5		
1	9	13.5		
2	13	19.5		
3	18	27.0		
4	20	30.0		
5	22	33.0		
6	24	36.0		
7	26	39.0		
8	29	43.5		
>8	33	49.5		

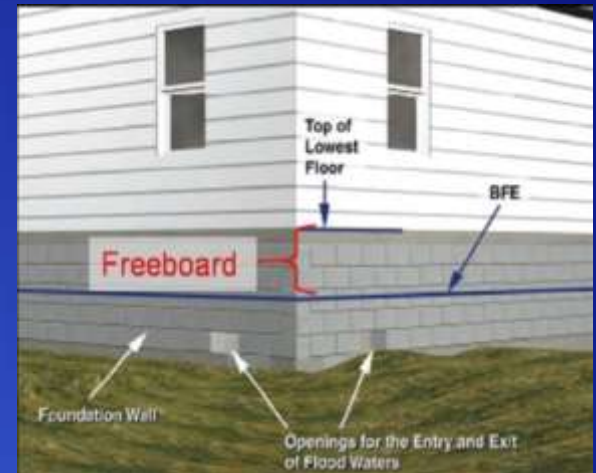
# Issue: Federal minimums cost more to insure

- Lowest floor at BFE - \$250,000 of coverage
  - \$726 annual premium
- Lowest floor 1 ft. above BFE - \$250,000 of coverage
  - \$419 annual premium = \$307 savings annually
- Lowest floor 2 ft. above BFE - \$250,000 of coverage
  - \$358 annual premium = \$368 savings annually

# Standard 7: Require 18 inches of freeboard.

**Current Criteria:** The NFIP minimum standards currently do not require any freeboard for first floors elevations.

**Proposed Standard:** All new construction or substantially improved structures (as defined by local governments) located within a FEMA mapped floodplain shall have the lowest floor, including basement, and all equipment and machinery elevated to or above 18 inches above the base flood elevation. In lieu of elevation, non-residential structures may provide dry-floodproofing such that the lowest floor of the building and all utilities are protected to a minimum height of 18 inches above BFE.



		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision ≥ 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓



## Standard 7 (Alternate): Require one foot of freeboard.

**Current Criteria:** The NFIP minimum standards currently do not require any freeboard for first floors elevations.

**Proposed Standard:** All new construction or substantially improved structures (as defined by local governments) located within a FEMA mapped floodplain shall have the lowest floor, including basement, and all equipment and machinery elevated to or above one foot above the base flood elevation. In lieu of elevation, non-residential structures may provide dry-floodproofing such that the lowest floor of the building and all utilities are protected to a minimum height of one foot above BFE.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision >= 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓

## Standard 8: Require 18 inches of freeboard for Manufactured Homes

**Current Criteria:** The NFIP minimum standards currently do not require any freeboard for first floor elevations of manufactured homes and allow new or replacement manufactured homes placed in older manufactured home communities to be placed on 36" piers even when base flood elevation is more than 36" above grade.

**Proposed Standard:** All new or substantially improved (as defined by local governments) manufactured homes located within a FEMA mapped floodplain shall have the lowest floor, including basement, and all equipment and machinery elevated to or above 18 inches above the base flood elevation.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision ≥ 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓

Issue: filling lot just above to be removed from floodplain completely eliminates floodplain standards





Building on a fill pad to 0.0 feet above BFE in areas with increasing flood risk leaves significant residual risk to the building – flood protection standards should still apply

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
515A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	6.0 feet
515B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.8 feet
516A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.8 feet
516B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
517A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
517B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.5 feet
518A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
518B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
519A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.6 feet
519B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
520	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.2 feet

## Standard 9: Shallow fill above BFE will not exempt a structure from floodplain regulations.

**Current Criteria:** Current criteria is to treat land removed from the floodplain by filling no differently than any other land which is outside the floodplain.

**Proposed Standard:** Fill placed in the floodplain which results in land having an elevation less than 18 inches above base flood elevation will not result in a relaxation of floodplain standards.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision ≥ 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓

# Issue: Venting not installed properly





# Standard 10: Hydrostatic venting required.

**Current Criteria:** The NFIP minimum standards currently require hydrostatic venting by requiring enclosures below BFE “shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters”. This proposed standard does not exceed existing minimum NFIP criteria.

**Proposed Standard:** Hydrostatic vents shall be required within one foot of grade for all new construction or substantially improved structures (as defined by local governments) with enclosures below the lowest floor located in FEMA mapped floodplains if the lowest adjacent grade to the structure is below the BFE. One square inch of openings must be provided for every square foot of enclosure.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision ≥ 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓

# Issue: Below grade crawl spaces in the SFHA.



Crawl space  
floor nearly 16  
inches below  
grade.

The NFIP  
prohibits this  
practice





# Standard 11: Prohibit below-grade crawl spaces or enclosures.

**Current Criteria:** The NFIP minimum standards prohibit “basements” and define basements as means any area of the building having its floor subgrade (below ground level) on all sides. Technically this would prohibit below grade crawl spaces, although it may be unclear whether the dirt grade in a crawl space is a “floor”.

**Proposed Standard:** If areas below the lowest floor of an elevated building are enclosed with areas usable for parking, storage, or building access, or are constructed with a crawl space, the elevation of the floor of the enclosure or crawl space must be at or above lowest adjacent grade on at least one side of the building.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision >= 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓

**NOTE: This proposed standard was voted down by the FDAC by an 11 to 6 vote**

## Proposed Standard 12 Prohibit subdividing of land in the floodplain.

**Current Criteria:** The NFIP does not prohibit new buildings, development or lots from being built in floodplains.

**Proposed Standard:** All new developments and subdividing of land within mapped floodplains shall be prohibited. For parcels to be developed or subdivided, those areas located within the floodplain shall be placed in deed restricted open space. This standard does not apply to Minor Subdivisions as defined by local governments.



		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non - Tidal	Recorded Lots Grandfathered	Proposed Subdivision $\geq 50$ lots or 5 acres	Proposed Subdivision $< 50$ lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
	✓		✓	✓		✓	✓

# Standard 13: Prohibit new non-water dependent structures in floodplains on newly subdivided land.

**Current Criteria:** The NFIP does not prohibit new buildings, development or lots from being built in floodplains.

**Proposed Standard:** Newly created lots in major subdivisions, as defined by local governments, may impact the floodplain as long as sufficient room outside the floodplain exists for future construction activities. All new structures within mapped floodplains shall be prohibited except buildings with water-dependent use. This standard does not apply to Minor Subdivisions as defined by local governments.



		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision ≥ 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
	✓		✓	✓		✓	✓



# Issue: development that negatively effects adjoining parcels

Slide from "No Adverse Impact - A Common Sense Strategy for Floodplain Management" presentation by Larry Larson, ASPPM.

## Today's Floodplain Is Not Necessarily Tomorrow's Floodplain



**If large areas of the floodplain are filled, then there will be an increase in the land area needed to store flood waters.  
This means your home or business may be impacted.**

## Standard 14: Prohibit encroachments that would cause more than 0.1 foot of rise without compensation.

**Current Criteria:** In Zones AE with a floodway/flood fringe mapped, the NFIP allows encroachments in the flood fringe which result in up to one foot of flood increase in the base flood event. In floodplains where no floodway/flood fringe has been mapped no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

**Proposed Standard:** In non-tidal areas with delineated floodplains, encroachment in all floodplains that would increase flood heights by 0.1 foot or more is prohibited. Compensatory storage may be used to mitigate the effects of floodplain development actions to meet the requirement that flood high increase does not exceed 0.1 foot at any location.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision ≥ 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
	✓	✓	✓	✓		✓	✓

# Standard 15: Incorporate FEMA technical bulletins in local floodplain regulations.

**Current Criteria:** The NFIP does not require participating communities to explicitly adopt the technical bulletins in ordinance or codes. The NFIP does require compliance with these technical bulletins in NFIP communities.

**Proposed Standard:** For all new development and new structures or substantially improved structures (as defined by local governments), activities in the floodplain shall be performed in a manner which is consistent with the following FEMA Technical Bulletins:

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision >= 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
✓	✓	✓	✓	✓		✓	✓



# Floodplain Recommendations

# Floodplain recommendations

- #1 DNREC shall make it a priority to modernize floodplain maps.
  - Western Sussex, Murderkill, Appoquinimink, Red Clay, White Clay, Mill Creek and entire coastline are currently underway.
- #2 DNREC should meet with the Board of Realtors within 6 months to develop improved wording on seller disclosure forms.
- #3 A Certified Floodplain Manager should be on staff, under contract, or available for assistance at each agency to review floodplain activities.

# Floodplain recommendations (continued)

- #4 Memoranda of Agreement (MOA) should be encouraged between counties or other larger governments and smaller towns for enforcement of floodplain regulations.
- #5 A separate plan review or building permit process specific to floodplain regulations should be required for all development or construction activities in floodplains.



# Floodplain recommendations (continued)

- #6 Communities should adopt floodplain maps by utilizing “effective map as last revised” terminology so that new or updated maps from FEMA are automatically adopted as they are issued by FEMA.
- #7 Communities should review their codes for wording which undermines NFIP requirements or makes them difficult to understand. (i.e. “no land below the 100 year flood level may be developed unless it complies . . .”)

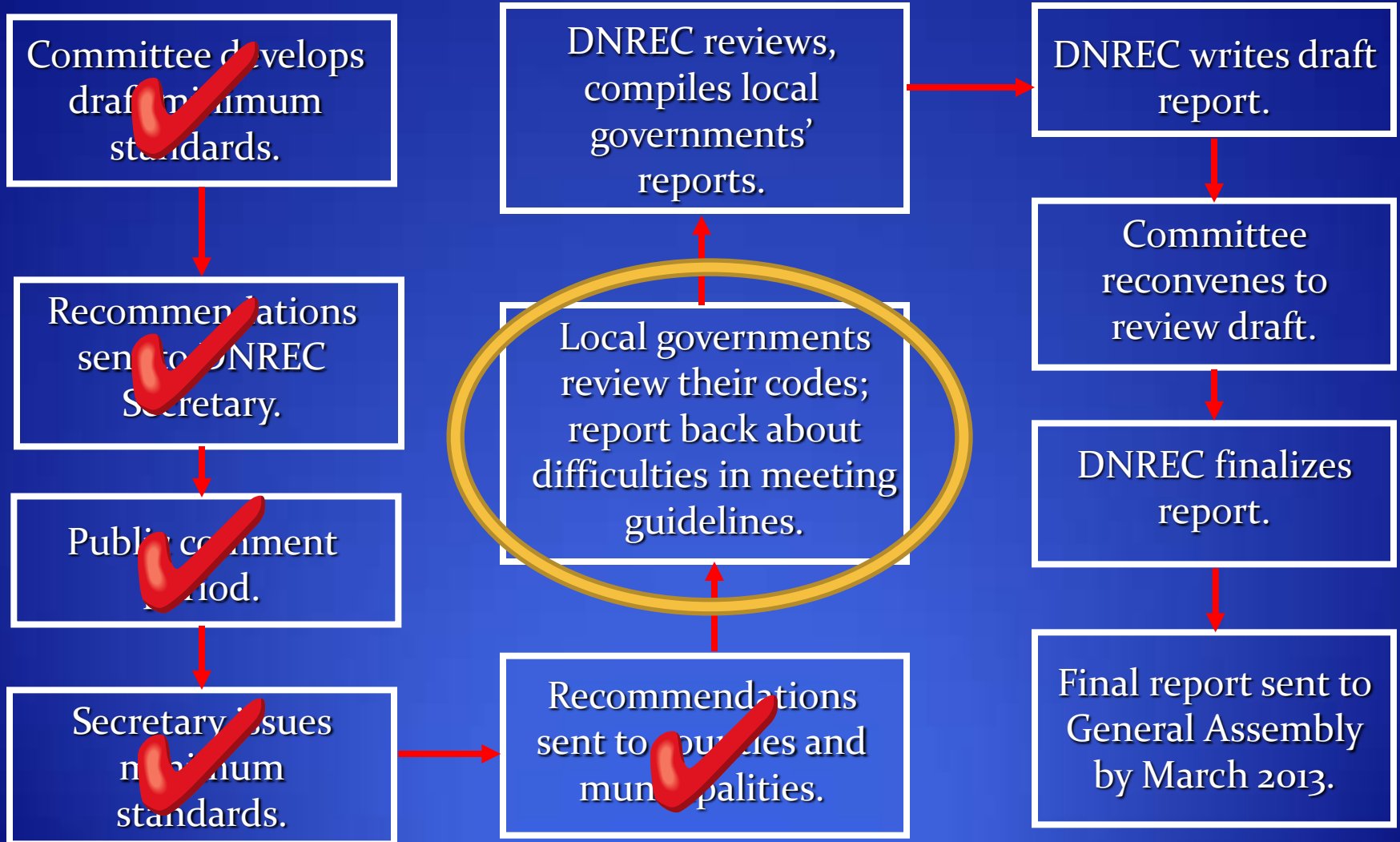


# Questions about Floodplain or Drainage Standards



# Municipal Code Review

# SB-64 Process





# MUNICIPAL CODE REVIEW

Within six months of the adoption of the minimum standards:  
County and community governments shall:

- Review and prepare comments regarding their local codes and ordinances to determine if they are consistent with the minimum standards
- Identify areas where existing requirements meet or exceed the FDAC recommendations and standards, are functionally equivalent, do not comply

# MUNICIPAL CODE REVIEW

Within six months of the adoption of the minimum standards  
County and community governments shall:

- Identify areas where implementation of these standards would represent a hardship to the local government.
- Identify impediments to adoption of these standards.
- The FDAC Committee will provide a framework, and DNREC will provide technical assistance to local governments in this analysis, when requested.

## Community resources likely to assist in preparing this review and assessment:

- Local government departments (building code, zoning, public works/engineering, planning)
- Town council members, planning commission, town managers, mayors as appropriate
- Municipal consulting engineers
- Municipal attorney
- Review of existing codes, ordinances and regulations

# Senate Bill 64 Ordinance Review Checklist (handout)

## Senate Bill 64 Floodplain and Drainage Standards Checklist (DE) July 2012

Community: \_\_\_\_\_ County: \_\_\_\_\_ State: DE \_\_\_\_\_ CID: \_\_\_\_\_  
State Reviewer: \_\_\_\_\_ Date: \_\_\_\_\_ State Determination: \_\_\_\_\_

Flood Zones: ☐ A ☐ AE ☐ AE (wo FW) ☐ AO ☐ VE

Item Description	State Review	Revised
<b>Senate Bill 64 Floodplain standards</b>		
1. For all new development activities which exceed 50 lots or 5 acres in locations contiguous to streams <u>without</u> a FEMA-delineated floodplain, a flood study shall be conducted.		
2. For all new development activities which exceed 50 lots or 5 acres in Zone A (no BFE) FEMA floodplains, a flood study shall be conducted and submitted to FEMA for approval prior to record plan approval.		
3. Only FEMA approved floodplain and BFE data shall be shown on record plans and development documents.		
4. Only base flood elevation data approved by the appropriate county or municipal agency or FEMA may be used in building permit application documents.		
5. Floodplain information must be included on permitting documentation.		
6. Require use of FEMA elevation certificate and flood-proofing certificate.		
7. Require 18 inches of freeboard for all new construction and substantial improvements.		
7A. Require 12 inches of freeboard for all new construction and substantial improvements.		
8. Require 18 inches of freeboard for manufactured homes.		
9. Fill placed in the floodplain which results in land having an elevation less than 18 inches above base flood elevation will not result in a relaxation of floodplain standards.		
10. Hydrostatic vents shall be required within 1 foot of grade.		
11. The elevation of the lowest floor beneath an elevated building, must be above the lowest adjacent grade on at least one side.		
12. Prohibit subdividing of land in the floodplain. Newly subdivided floodplain shall remain deed restricted open space.		
13. Prohibit new non-water dependent structures in floodplains in newly subdivided lands.		
14. Prohibit encroachments that would cause more than 0.1 foot of rise without compensation.		
15. Incorporate FEMA technical bulletins in local floodplain regulations.		



Floodplain and Drainage Advisory Community, DNREC and other resources likely to assist in preparing this review and assessment:

- DNREC staff
- University of Delaware Water Resources Agency
- County Conservation Districts
- FDAC Consultant (Duffield and Associates)
- FEMA staff

# Timeline for SB 64 Municipal Code Assessment

\*\*\*\*\*

## Timeline for completing Community Regulatory review

August 2012 –	Issuance of Secretary's Order adopting floodplain and drainage standards
August 15 – Sept 15	Communities review existing regulations for consistency/deficiencies
Sept 15 – Nov 15	Communities meet with DNREC, U. Del for assistance in completing review
Nov 15 – Jan 2013	Communities finalize and send reports to DNREC
Jan – Feb 2013	DNREC develops final report for State Legislature

# COMMUNITY COMMENTS

# Contact Information

## Drainage

- James Sullivan James.Sullivan@state.de.us
- Brooks Cahall Brooks.Cahall@state.de.us

## Floodplain

- Greg Williams Gregory.Williams@state.de.us
- Michael Powell Michael.Powell@state.de.us

## Website

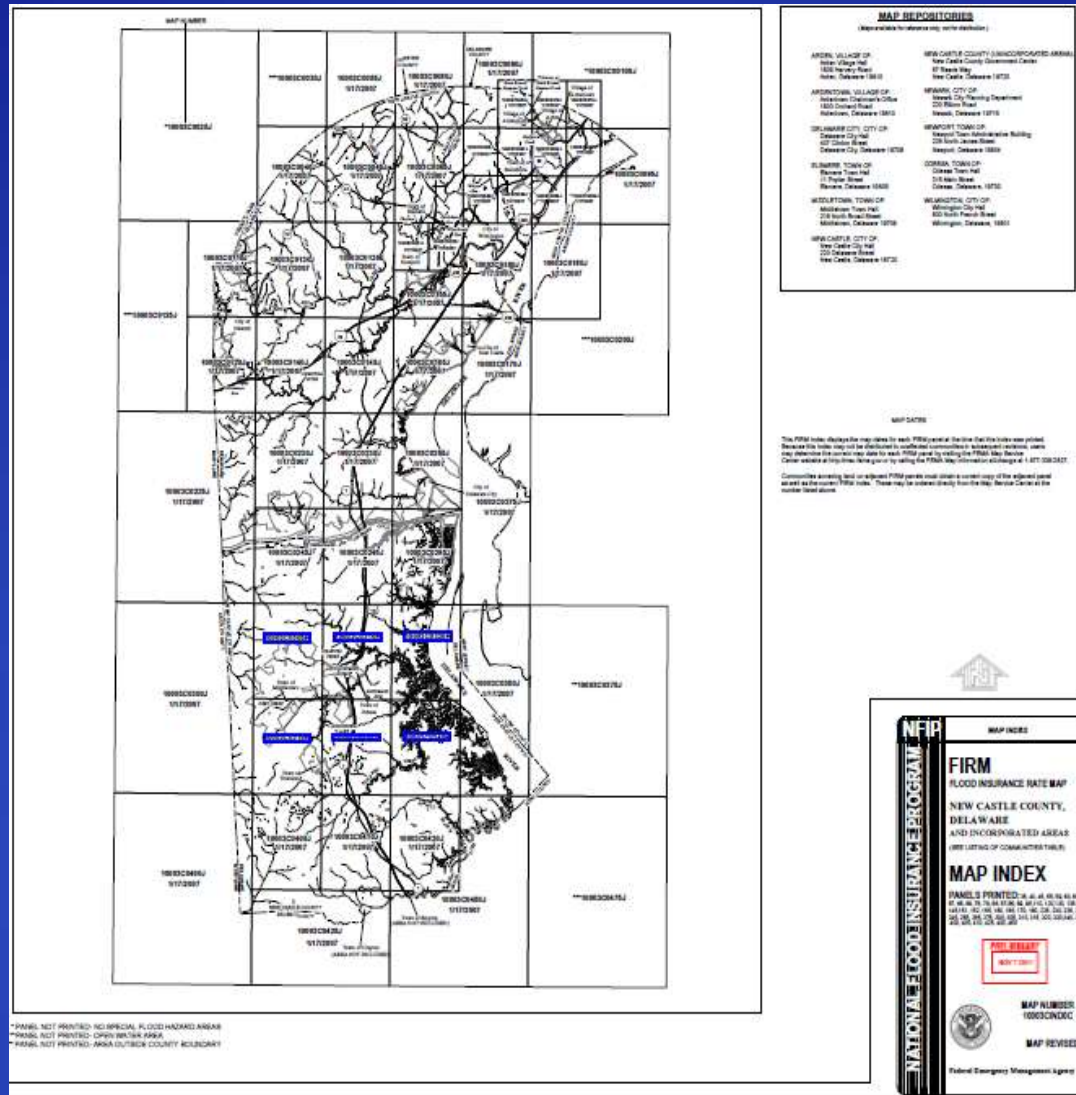
[www.dnrec.delaware.gov/swc/Drainage/Pages/Flooding.aspx](http://www.dnrec.delaware.gov/swc/Drainage/Pages/Flooding.aspx)



# FEMA FLOOD STUDY AND MANDATORY ORDINANCE ADOPTION TIMELINE

- [www.rampp-team.com/de.htm](http://www.rampp-team.com/de.htm)
- [www.r3coastal.com](http://www.r3coastal.com)
- [maps.dnrec.delaware.gov/navmap/](http://maps.dnrec.delaware.gov/navmap/)

# Area being revised



[illegible]

(Images available for reference only  
see the illustrations.)

FEMA makes information about map features, such as street locations and houses, in a near designated flood hazard areas. Requests to revise information in a near designated flood hazard areas may be provided to FEMA during the community review period, at the final consultation, Coordination Officer's meeting, or during the statutory 30-day appeal period. Approved requests for changes will be shown on the final printed map.

[illegible][illegible]

There is used as the current study means. The may be assessed directly from the data (see Table 1) or by the method of the study.

Sallyann Beach Town Hall  
214 Oakfield Parkway  
Sallyann Beach, Delaware 19820

Revised: December 10, 2023

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301 North Main Street  
Windsor, Ontario N9B 1E1

1314 West Street  
Cape Town, (Tel: 021 462 1000)  
Cape City, 7700

100 Railway Avenue  
Greenville, Delaware 19701

FRANK ISLAND, TOWN OF  
Second School Term 1961

FRANKFORD, TOWNSHIP  
Frankford Town Hall

GEORGETOWN, TOWN OF  
Georgetown Town Hall

GREENWOOD, TOWN OF  
Greenwood Town Hall  
640 Main St., P.O. Box 714  
Greenwood, N.H. 03046

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0000 HILLSIDE LACRES, TOWN OF  
Hillsdale Avenue Town Hall  
104 Tylersville Road

LAUREL, TOWNSHIP OF  
Laurel Town Hall  
301 Livingston Street  
Laurel, MD 21113

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